Amendment to the Claims:

1. (Previously presented) A magnetic resonance imaging system comprising a reconstruction unit arranged to

reconstruct a complex image of complex valued pixels from magnetic resonance signals, compute a distribution of phase values of the complex image,

apply a phase correction to the complex image to form a corrected complex image, and

iteratively adjust the phase correction on the basis of the distribution of phase values of the complex image.

2. (Original) A magnetic resonance imaging system as claimed in Claim 1, wherein the distribution of phase values of the complex image is represented by a histogram of the phase values of the complex image.

3. (Previously presented) A magnetic resonance imaging system as claimed in Claim 2, wherein the phase correction is iteratively adjusted on the basis of a test function of the histogram.

4. (Previously presented) A magnetic resonance imaging system as claimed in Claim 3 wherein the test function of the histogram discriminates peaks in the histogram from broader distributions.

5. (Original) A magnetic resonance imaging system as claimed in Claim 4, wherein the test function is formed by the histogram power function.

6-7. (Cancelled)

8. (Currently amended) A magnetic resonance imaging system as claimed in Claim 3, wherein the reconstruction unit is arranged to make the phase correction on the basis of a polynomial phase correction and to ~~iteratively~~ adjust the phase correction by adjusting polynomial coefficients of the polynomial phase

correction ~~so as~~ by way of a trial and improve algorithm controlled to optimize the test function.

9. (Previously presented) A magnetic resonance imaging system comprising a reconstruction unit arranged to reconstruct a complex image of complex valued pixels from magnetic resonance signals, compute a distribution of phase values of the complex image represented by a histogram of the phase values of the complex image, apply a phase correction to the complex image controlled on the basis of a test function of the histogram to form a corrected complex image, and control the phase correction on the basis of the distribution of phase values of the complex image by adjusting polynomial coefficients of a polynomial phase correction so as to optimize the test function, the polynomial coefficients being adjusted by way of a trial and improve algorithm controlled on the basis of the test function.

10. (Currently amended) A magnetic resonance imaging method comprising:

reconstructing a complex image of complex valued pixels from magnetic resonance signals;

computing a distribution of phase values of the complex image;

applying a phase correction to the complex image to form a corrected complex image; ~~and~~

iteratively adjusting the phase correction on the basis of the distribution of phase values of the complex image to generate an iteratively adjusted phase correction that enhances peaks in the distribution of phase values relative to broader structures; and

displaying or storing an image corresponding to the complex image incorporating the iteratively adjusted phase correction.

11. (Currently amended) A digital image processing unit including a processing unit programmed ~~computer program comprising instructions~~ to compute a distribution of phase values of a complex image, apply a phase correction to the complex image to form a corrected complex image, and iteratively adjust the phase

correction on the basis of a test function of the distribution of phase values of the complex image that discriminates whether the distribution is predominated by peaks or by broader structures, the iterative adjustment being ended when the test function indicates that the distribution is dominated by peaks indicative that the adjusted phase correction is adequate.

12. (Currently amended) A ~~computer program~~ digital image processing unit as claimed in Claim 11, wherein the test function is a histogram power function.

13. (Currently amended) A ~~computer program~~ digital image processing unit as claimed in Claim 11, wherein the test function is selected from the group of test functions f that satisfy the condition $f(h)$ is greater than or equal to h for all h greater than or equal to one.

14. (Currently amended) A magnetic resonance imaging system ~~as claimed in Claim 6, wherein the~~ comprising a reconstruction unit is arranged to

reconstruct a complex image of complex valued pixels from magnetic resonance signals,

compute a distribution of phase values of the complex image,

apply a polynomial phase correction to the complex image to form a corrected complex image, said polynomial phase correction being represented by its polynomial coefficients, and

control the polynomial phase correction on the basis of the distribution of phase values of the complex image by iteratively adjusting polynomial coefficients of the polynomial phase correction.

15. (Previously presented) A magnetic resonance imaging method as claimed in Claim 10, wherein:

the applying of a phase correction includes applying a plurality of different phase corrections to the complex image to form a plurality of different trial corrected complex images; and

the iteratively adjusting of the phase correction includes selecting that trial corrected complex image for which the distribution of phase values is optimized.